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February 2, 2010

Via Electronic Filing

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: **EX PARTE**
ET Docket No. 09-36 - Amendment of Parts 2 and 95 of the Commission's Rules to Provide Additional Spectrum for the Medical Device Radiocommunication Service in the 413-457 MHz Band

Re: *Comment Sought on Health Care Delivery Elements of National Broadband Plan,* NBP Public Notice #17

Dear Ms. Dortch:

On February 2, 2010, David Hankin, CEO of the Alfred Mann Foundation ("AMF"), and the undersigned, counsel to AMF, made a presentation addressing the above-captioned proceedings to Dr. Mohit Kaushal, Pierce Graham-Jones and Kerry McDermott, all of the National Broadband Task Force, Office of Strategic Planning and Policy Analysis. The AMF representatives provided background on AMF operations and discussed the status of the above-captioned proceedings.

Attached is a copy of the presentation that was distributed during the meeting.

Pursuant to Section 1.1206(b) of the Commission's rules, this letter is being filed electronically with your office.

Yours very truly,

/s/ Cheryl A. Tritt
Cheryl A. Tritt
Counsel to the Alfred Mann Foundation

Attachment

cc: Dr. Mohit Kaushal
Pierce Graham-Jones
Kerry McDermott

ALFRED MANN FOUNDATION

Medical Micropower Network Service in the 413-457 MHz Band

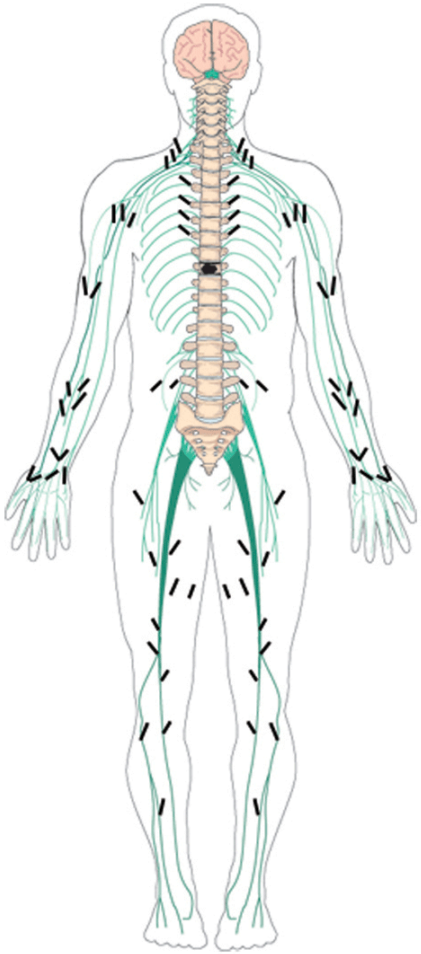
David Hankin
Chief Executive Officer
Alfred E. Mann Foundation for Scientific Research
February, 2010

ALFRED MANN FOUNDATION

Alfred Mann Foundation

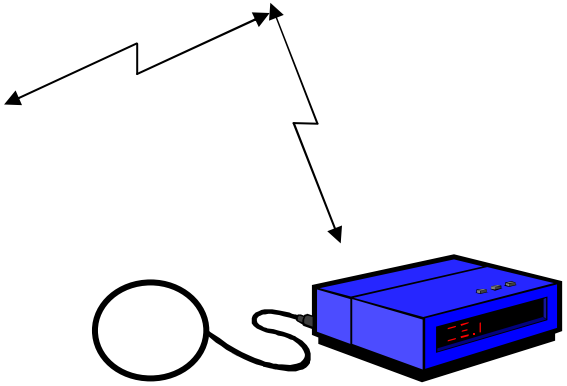
- Founded in 1985
- Non-profit engaged solely in medical research
- Initiated R&D on numerous advanced medical devices
  - Cochlear implant (hearing impaired)
  - Retinal prosthesis (vision)
  - Fully implantable glucose sensor (diabetes)
  - Microstimulator system (movement disorders)

AMF Microstimulator System

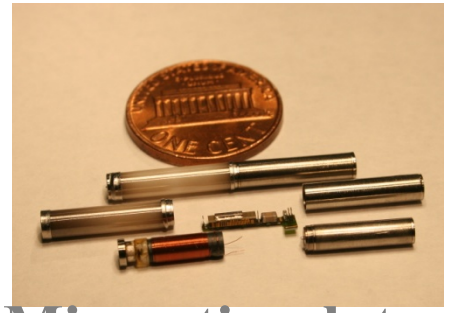


MCU

Clinician's Programmer



Charger



Microstimulator Implant

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Objective

Secure secondary allocation of spectrum for transformative medical technology

413 – 419 MHz	426 – 432 MHz	438 – 444 MHz	451 – 457 MHz
Emergency Land Mobile Radio	Radar	Radar	Commercial Channel/Land Mobile Radio

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AMF Microstimulator System

- Movement Disorders
  - Restores function and sensation to paralyzed limbs and organs
    - Traumatic brain injury (signature injury from conflicts)
    - Stroke (~800,000 per year in US)
    - Spinal cord injury (~12-15K per year in US)
    - Multiple Sclerosis
    - Cerebral palsy
- Advanced Prosthesis
  - Provides wireless sensation and control to next generation prosthesis
    - Lower weight
    - Direct neural control

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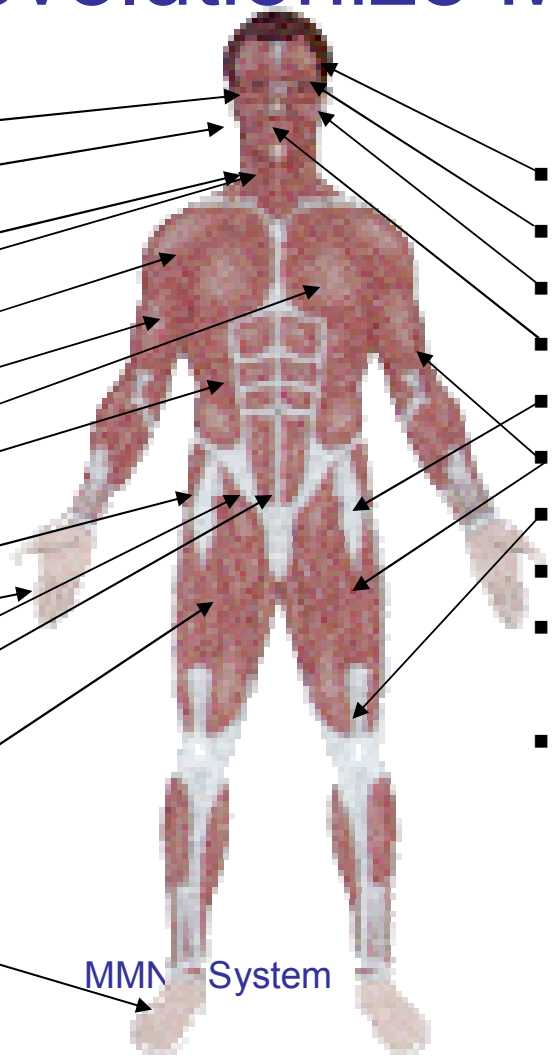
AMF's Transformative Technology Poised to Revolutionize Medicine



- Eyelid droop
- Facial palsy
- Shoulder Subluxation
- Sleep apnea
- Muscle atrophy
- Arm/hand rehab
- Cardiac assist
- Cough
- Pressure Ulcers
- Spasticity
- Bladder control
- Bowel control
- Gait rehabilitation
- Foot drop

- Parkinson's disease
- Cerebral Palsy
- Vertigo
- Dysphagia
- FES Exercise
- Smart Prosthesis
- Arthritis
- Nerve Repair
- Nerve Regrowth

- And many more to come

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Project Evolution

- 9 years in development
- 120 person team consisting of approximately 90 scientists of various disciplines
- To date, ~$100 million (in tax exempt dollars) invested in development
  - Estimate $120 million to complete
- Working with FDA, FCC, NTIA and other regulators for several years

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Experimental Evolution

2005	• FCC grants experimental license for 410-470 MHz • Renewed in 2009
2005 - 2007	• UK stroke clinical study • Restored movement to paralyzed hands and arms of stroke patients
2006 - 2008	• *In vivo* studies demonstrate biocompatibility • *In vitro* studies verify communications operations
2008	• 2 implants in laboratory animals • Stimulation, communication and battery recharge confirmed
2009	• Walter Reed Army Medical Center Study • Movement restored to lower limbs of spinal cord injured patient
2010	• Version 1 and 2 of MMNS system will be completed in Q1 and Q3, respectively • Human clinical trials planned for Q4

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No Comparable System Exists Anywhere in the World

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AMF Time Imperative

- 2010 - 2011 Planned Clinical Collaborations

Collaborator	Medical Condition
Walter Reed	Maintenance of anabolic function
Navy	TBI vertigo-like symptoms
Veteran's Administration	Pressure ulcers prevention
USC	Dysphagia
Shriners Children's Hospital	Spasticity in CP children
National University of Ireland	Venous Ulcers

- Treatment of injured returning warfighters

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FCC Proceeding

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Procedural Background

- FCC adopted a rulemaking that would provide secondary access to 413-457 MHz spectrum for wideband medical service
  - NPRM issued in March, 2009
  - Initial comment period ended on August 11, 2009
  - Reply period concluded on September 11, 2009
- Allocation request will go through NTIA IRAC process

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NPRM Comments

- Supporters
  - Filed comments strongly supporting FCC proposal to allow MMN devices in the 413-457 MHz band
    - More than 50 supporting parties
    - Include a broad spectrum of interests, including Congressional leaders, government agencies, veterans organizations, medical research and treatment establishments, non-profit organizations, equipment manufacturers, doctors, scientists, and individuals with disabilities
- Detractors
  - Filed comments opposing the proposed MMN operations
    - Only a handful of parties
    - Include incumbent land mobile radio (APCO, LMCC, Motorola), broadcast auxiliary (MSTV and SBE), and amateur radio (ARRL)

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Response

- Lower 400 MHz band is ideal for wireless medical implant devices
  - Conclusion supported by data and accepted by both the FCC and the scientific community
  - Critical factors support conclusion
    - RF signal propagation within the human body
    - physical size and power consumption of implant devices
    - international frequency compatibility
- WMTS and Part 90 medical telemetry spectrum are unsuitable
  - over-populated with other commercial, high-power transmitters
  - FCC rules limit the use of these bands to health care facilities to measure and record patient-related information
  - Mobile, more complex functions of MMN devices fall well outside the intended use of these frequencies

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Response

- MMNs are designed specifically to avoid causing harmful interference to incumbent services through numerous operational factors and techniques
  - low power operation
  - low duty cycle
  - wideband operation
  - near-ground operation.
- MMNs will not receive harmful interference from incumbent services
  - message coding
  - spectral notching
  - dynamic channel switching
  - wideband operation
  - timing and filtering

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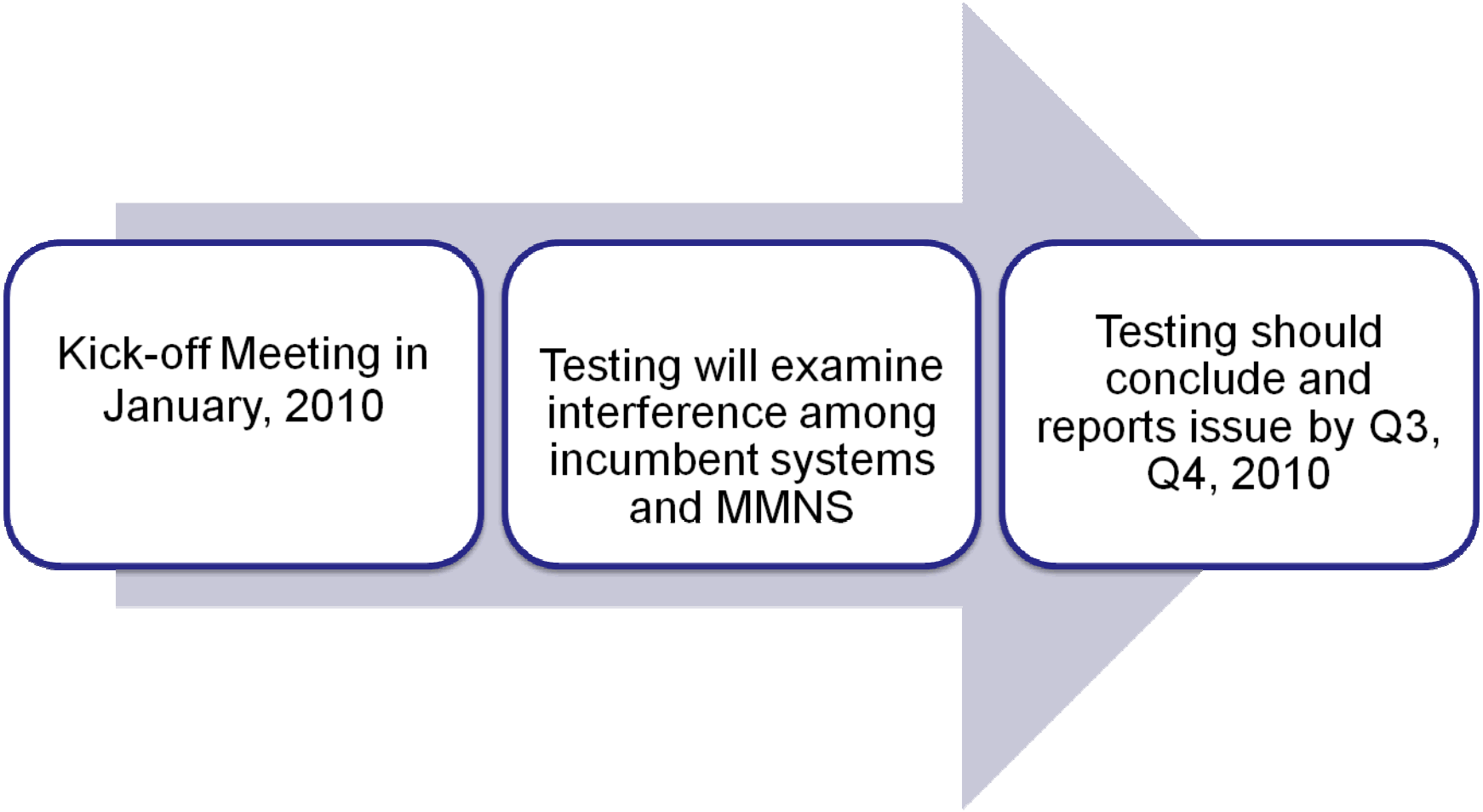
Joint Testing with JSC



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Appendix

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Current Channel Allocation

INTERNATIONAL TABLE	UNITED STATES TABLE		FCC RULE PART(S)
* * * * *	**Federal Table (MHz)**	**Non-Federal Table (MHz)**	
* * * * *	**410-420** FIXED US13 MOBILE SPACE RESEARCH (space-to-space) 5.268 G5 US399	**410-420** US13 US399	**Private Land Mobile (90)** **Personal (95)**
* * * * *	**420-450** RADIOLOCATION US217 G2 G129 5.286 US7 US87 US230 US397 G8 US399	**420-450** Amateur US7 NG135 5.282 5.286 US87 US217 US230 US397 US399	**Private Land Mobile (90)** **Amateur (97)** **Personal (95)**
* * * * *	**450-454** 5.286 US87 US399	**450-454** LAND MOBILE 5.286 US87 US399 NG112 NG124	**Auxiliary Broadcasting (74)** **Private Land Mobile (90)** **Personal (95)**
* * * * *	**454-456**	**454-455** FIXED LAND MOBILE US399 NG12 NG112 NG148	**Public Mobile (22)** **Maritime (80)** **Personal (95)**
		455-456 LAND MOBILE US399	**Auxiliary Broadcasting (74)** **Personal (95)**
* * * * *	**456-460** 5.287 5.288 US399	**456-460** FIXED LAND MOBILE 5.287 5.288 US399 NG112 NG124 NG148	**Public Mobile (22)** **Maritime (80)** **Private Land Mobile (90)** **Personal (95)**